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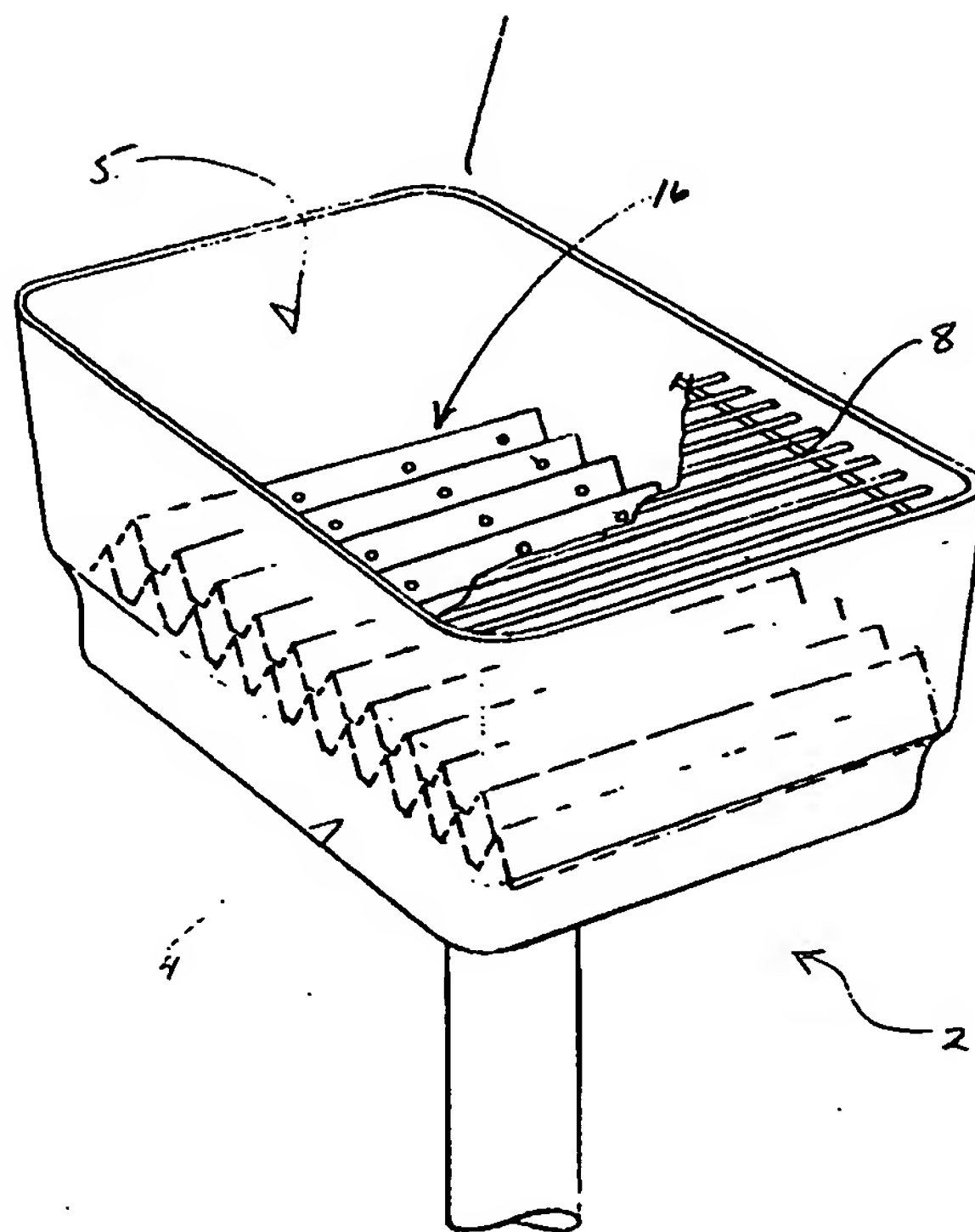
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(51) Int.Cl.⁶ A47J 37/07

(54) **DISPOSITIF DE REGLAGE DE LA FLAMME D'UN BARBECUE**

(54) **BARBEQUE FLAME CONTROL ARRANGEMENT**



(57) A barbecue is provided with a two layered flame control heat distribution substrate located between a heat source and a cooking surface. The layers cooperate to provide effective burning of grease and more even distribution of heat beneath the cooking surfaces. Grease is burned off as it passes over the first and second layers, and excess grease is directed away from the heat source. Air flows through the substrate changing directions and serves to reduce localized hot spots in the upper layer.

ABSTRACT OF THE DISCLOSURE

A barbeque is provided with a two layered flame control heat distribution substrate located between a heat source and a cooking surface. The layers cooperate to provide effective burning of grease and more even distribution of heat beneath the cooking surfaces. Grease is burned off as it passes over the first and second layers, and excess grease is directed away from the heat source. Air flows through the substrate changing directions and serves to reduce localized hot spots in the upper layer.

TITLE: BARBEQUE FLAME CONTROL ARRANGEMENTFIELD OF THE INVENTION

5 The present invention relates to barbeques, and in particular, to systems for distributing heat beneath a cooking grill and the control of grease from by food while being cooked.

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BACKGROUND OF THE INVENTION

 Gas and propane barbeques have become extremely popular for outdoor cooking. These barbeques typically include a two piece cooking chamber with a burner
15 arrangement near the base of the chamber. A cooking grill is supported above the burner. Depending upon the food being cooked, there will be drippings from the food and these drippings are usually highly flammable. Lava rocks have been used to form a barrier between the burner and the
20 cooking grill and these lava rocks provide a surface onto which the drippings fall. Some of the drippings burn when they come in contact with the hot lava rocks. Lava rocks have the tendency to produce localized hot spots where excessive food drippings are produced and uneven cooking
25 results.

 It is desirable to burn the food drippings to increase the flavour of the food being cooked, however, hot spots produce uneven cooking, and often charring of the
30 food. Manufacturers have developed many different burner designs to enhance even heat distribution throughout the barbeque and there are specialty burners for cooking from the side or top of the food to reduce the problem of uncontrolled hot spots. In some barbeques, the lava rocks
35 are replaced with a metal plate which forms a heat distribution shield between the cooking grill and the burner.

The problems associated with excess grease, i.e. grease which is not effectively burned in a controlled manner, has been recognized by the industry, and one solution uses a special cooking grill which channels grease
5 produced by the food towards the base of the barbeque and away from the burner.

The present invention provides an effective approach for distributing heat beneath a cooking grill and
10 for controlling the grease and enhancing the cooking process by burning a substantial portion of the grease to improve flavour.

15 SUMMARY OF THE INVENTION

In the present invention, a barbeque comprises a base having a cavity containing a heat source spaced above the bottom of the base, with a heat distribution arrangement above the heat source separating the heat
20 source from the cooking grill, supported above the heat distribution arrangement. The heat distribution arrangement comprises a first and a second layer cooperating to define a substrate having a series of tube channels extending thereacross, with an upper part of each
25 tube channel being defined by the first layer, and a bottom part of each channel being defined by the second layer.

According to an aspect of the invention, the first layer and the second layer of the heat distribution
30 arrangement are identical parts which are stacked one above the other in an offset manner to form said series of channels.

According to a further aspect of the invention, the
35 first layer and the second layer have a similar cross section.

According to yet a further aspect of the invention, the first layer and the second layer have an undulating surface defining a wave pattern of peaks and troughs. The peaks of the first layer are aligned with the troughs of the second layer to thereby form a series of tube channels.

According to yet a further aspect of the invention, the first layer includes locating members for maintaining the alignment of the first layer above the second layer.

According to yet a further aspect of the invention, the first layer is supported by the second layer and easily removable from the second layer.

According to yet a further aspect of the invention, each trough of the wave pattern at the base thereof, includes a narrow land portion extending in the length of the trough and the lands of the first layer are supported by the peaks of the second layer.

According to yet a further aspect of the invention, each layer has a series of holes to define a convoluted drain path through said substrate such that grease which may fall on the upper layer tends to burn off as it drains across the first and second layers, and any remaining grease passes through the heat distribution arrangement.

According to yet a further aspect of the invention, the land portions of the troughs include drain slots spaced in the length of each trough through which grease can pass through the layer.

In yet a further aspect of the invention, the first and second layers include drain holes in the peaks of the wave pattern and the drain holes cooperate with the drain slots to allow air flow through the heat distribution substrate.

BRIEF DESCRIPTION OF THE DRAWINGS

Preferred embodiments of the invention are shown in the drawings, wherein:

Figure 1 is a partial perspective view showing a
5 base of a barbeque;

Figure 2 is a longitudinal sectional view through a barbeque showing the location of two heat distribution arrangements above a gas burner, and separating the gas burner from a cooking grill;

10 Figure 3 is a partial perspective view similar to Figure 3 showing details of one of the heat distribution arrangements; and

Figure 4 is a partial perspective view showing the cooperation between the two layers of the heat distribution
15 arrangement.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The barbeque 2 shown in Figures 1 and 2 has a base
20 a base 4 which is closed by pivoting lid 10. The base has a cavity 5 which houses the heat source 6, the heat distribution substrate 4, and the cooking grill 8. The heat distribution substrate separates the cooking grill from the burner and provides protection of the burner from
25 falling grease or drippings from any food being cooked.

The heat distribution substrate as shown in the sectional view of Figure 2 has been divided into two substrates 14 and 16. Each heat distribution substrate has
30 a first or upper layer 18 which cooperates with a second or lower layer 20. Preferably, the first and second layers are of identical cross section and shape. Each layer has a wave-like pattern with a series of peaks 24 separated by troughs 26. Land portions 28 are located at the base of
35 each trough and the land portions of the first layer 18 engage and are supported by the peaks 24 of the second layer 20. As can be seen, the first layer has been offset relative to the second layer such that the peaks 24 of the

first layer are generally centered above the troughs 26 of the second layer. The first and second layers have a wave-like pattern across their surface and when the two layers are positioned in the described offset manner, the heat distribution substrate produces a series of tube-like channels 40 extending across the substrate and these channels are opened at either end of the substrate. With these channels, the surface temperature of the first layer is more uniform.

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Each peak has a first downwardly sloping wall 32 and a second downwardly sloping wall 34. A first series of holes 36 are provided in the first downwardly sloping walls 32 and a second series of holes 38 are provided in the second downwardly sloping walls 34. These holes are offset along the length of the channel, as shown in Figure 4.

Each of the troughs has a series of drain slots 44 distributed along the length of each trough. These drain slots allow grease which falls on the first layer to pass through the first layer and contact the second layer located beneath these slots. The drain slots of the second layer allow any grease which is not burned off during the flow of grease across the heat distribution substrate to pass through the second layer and be gathered in the base of the barbeque in a conventional manner. The sloped surfaces of the first layer promote the flow of grease and reduces the likelihood of grease accumulation leading to hot spots. Similarly, the drain slots 44 allow grease to flow downwardly to the second layer.

Preferrably, the land portions 28 are located directly above the flat surfaces of the burner 6 and grease is moved outwardly away from the burners to the drain slots. Therefore, any excess grease does not contact the burner but falls to the bottom of the barbeque base 4.

A further feature of the drain slots 44 and the first series of holes 36 and the second series of holes 38, is to allow air or gas flow through these slots and thus, through the heat distribution substrate. The hot gas products of combustion heat the layers as the gases flow through the various slots and holes prior to contacting the cooking grill. The heat distribution substrate is at a raised temperature and provides radiant energy for cooking of any food placed on the cooking grill 8. Any grease or drippings on the food being cooked falls through the cooking grill 8 and contacts the heat distribution substrate. It initially strikes the first layer 18 and in most cases will contact a first downwardly sloping wall 32 or a second downwardly sloping wall 34. When the grease contacts either of these downwardly sloping walls, it will burn off or flow over these walls towards the second layer.

If there is an excess amount of grease, it will find its way through to a drain holes 36 or 38, or the drain slots 44 of the first layer. Any grease which passes through these openings contacts a downwardly sloping surface of the second layer and provides a further opportunity for the grease to be combusted as it is passing through the heat distribution substrate. Most of the grease which falls on the heat distribution substrate will be combusted in a controlled manner and produce additional heat and products of combustion which contribute to the cooking process. Any grease or food drippings which fall on the heat distribution substrate are encouraged by gravity to flow across the hot surfaces providing additional time for combustion while also directing excess grease away from the burner surfaces to the drain slots. If there is a localized area of high drippings, this excess grease flows in a manner to combust as much of the grease as possible without producing substantial hot spots and directing any remaining grease to the base of the barbeque for accumulation in a normal manner.

The heat distribution layers 18 and 20 are preferably made of a metal material and can be manufactured using a number of different processes. These layers can be of stainless steel material of a suitable material with a porcelain surface or an anodized steel. The steel or iron material base of these layers provides effective heat distribution throughout the layer and effective heat distribution to the cooking grill. The system is designed to protect the burners and the holes and drain slots are located to provide a convoluted drain path for burning of these substances as they flow through the substrate.

Figure 3 shows a simple arrangement for locating the first layer 18 above the second layer 20. In this case, drain slot 44a of the first layer 18 includes downwardly extending tabs 60 and 62 which engage opposite sides of the peak of the second layer located therebelow. Preferably the end drain slots of the first trough of the layer include these tabs such that four tabs are provided for the layer. These tabs allow the proper positioning of the first layer above the second layer and the substantial land portions 44 allow for any misalignment or changes due to heating of the layers. With this arrangement, the land portions engage the peaks of the layer below and provide support for the first layer above the second layer.

Figure 4 illustrates the offset drain holes in the downwardly sloped surfaces either side of a peak and the support of the land portions 24 of the first layer on the peaks of the second layer. The change in direction of the airflow through the substrate is a result of the offset of the layers, and thus the offset of the drain slots.

It has been found that this particular heat distribution substrate formed two layers is effective in directing air flow through the substrate and providing a particular drain path for food drippings and grease. Each

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layer is preferably identical in construction and is cost effective to produce. In addition, it is easy to assemble without tools and it is convenient to clean, if and when necessary.

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Although various preferred embodiments of the present invention have been described herein in detail, it will be appreciated by those skilled in the art, that variations may be made thereto without departing from the spirit of the invention or the scope of the appended claims.

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THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

1. A barbeque comprising a base having a cavity containing a heat source spaced above the bottom of the base with a heat distribution arrangement above said heat source separating said heat source from a cooking grill supported above said heat distribution arrangement, said heat distribution arrangement comprising a first layer and a second layer cooperating to define a substrate having a series of tube channels extending there across with an upper part of each tube channel being defined by said first layer and a bottom part of each channel being defined by said second layer.
2. A barbeque as claimed in claim 1 wherein said first layer and said second layer are identical parts which are stacked one above the other in an offset manner to form said series of channels.
3. A barbeque as claimed in claim 1 wherein said first layer and said second layer are of similar cross section.
4. A barbeque as claimed in claim 1 wherein said first layer and said second layer have an undulating surface defining a wave pattern having peaks and troughs and the peaks of the first layer are aligned with the troughs of said second layer to thereby form said series of tube channels.
5. A barbeque as claimed in claim 4 wherein said first layer includes locating members for maintaining the alignment of the first layer above said second layer.
6. A barbeque as claimed in claim 5 wherein said locating members cooperate with said peaks of said second layer to maintain alignment.

7. A barbeque as claimed in claim 5 wherein said first layer is supported by said second layer.
8. A barbeque as claimed in claim 4 wherein each trough at the base thereof includes a narrow land portion extending in the length of the trough and the lands of said first layer are supported by the peaks of said second layer.
9. A barbeque as claimed in claim 8 wherein each layer has a series holes to defining convoluted drain paths through said substrate to allow grease which falls on said upper layer to burnoff as it drains across said first and second layers and any remaining grease passes through said substrate.
10. A barbeque as claimed in claim 9 wherein each peak includes a first series of holes on a downward sloping surface to a left side of said peak and a second series of holes on a downward sloping surface to a right side of said peak which are offset relative to said first series of holes.
11. A barbeque as claimed in claim 10 wherein said land portions include drain slots spaced along the length of each land portion.
12. A barbeque as claimed in claim 11 said first and said second series of holes overlap with said drain slots.
13. A barbeque as claimed in claim 11 wherein said drain slots and said drain holes allow air through said heat distribution substrate.
14. A barbeque as claimed in claim 13 wherein said first and second layers define at least five tube channels across said heat distribution substrate.

15. A barbeque as claimed in claim 1 wherein said barbeque includes one heat distribution substrate located to one side of the centerline of the barbeque and a second heat distribution substrate located to the opposite side of said centerline.

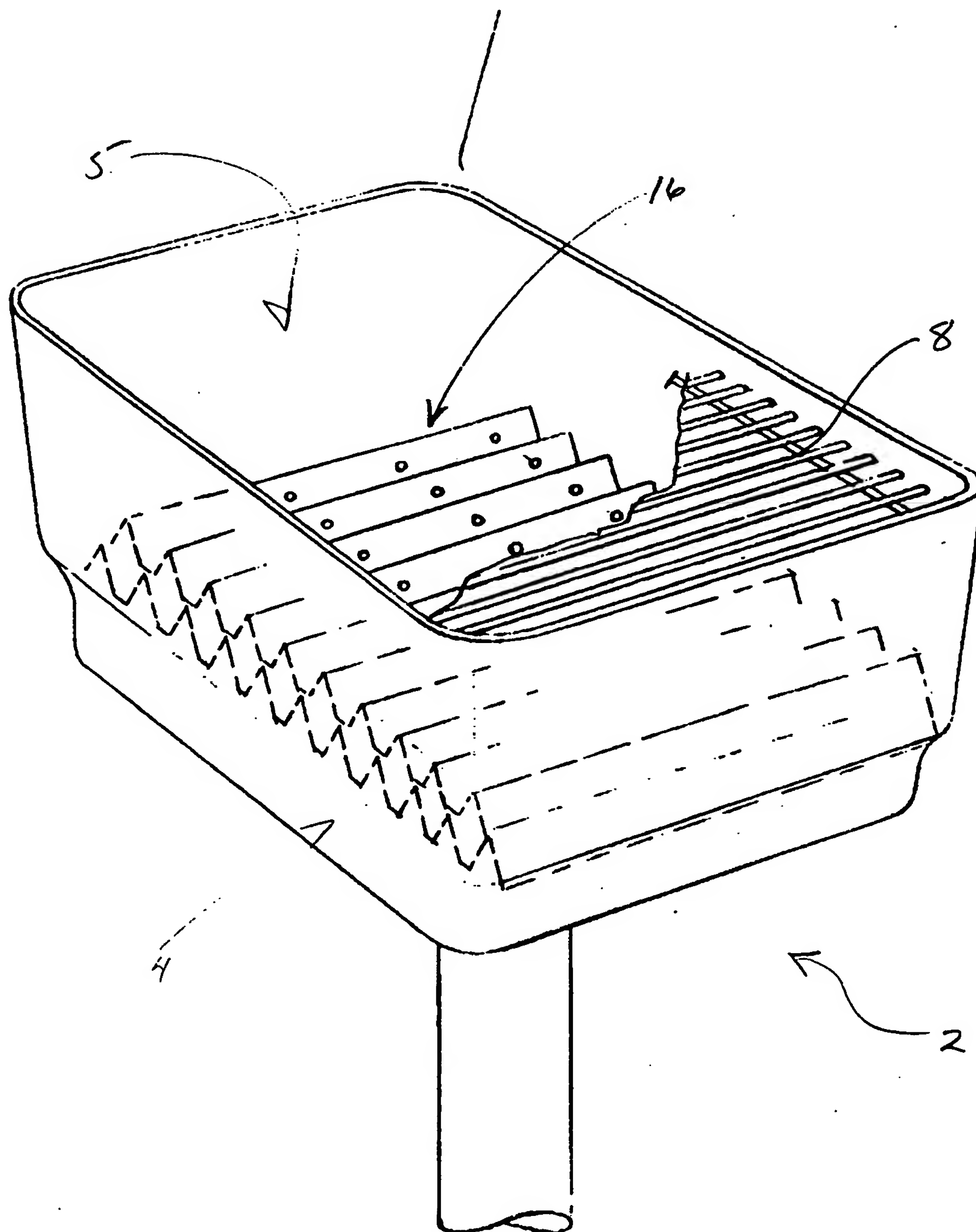


FIGURE 1

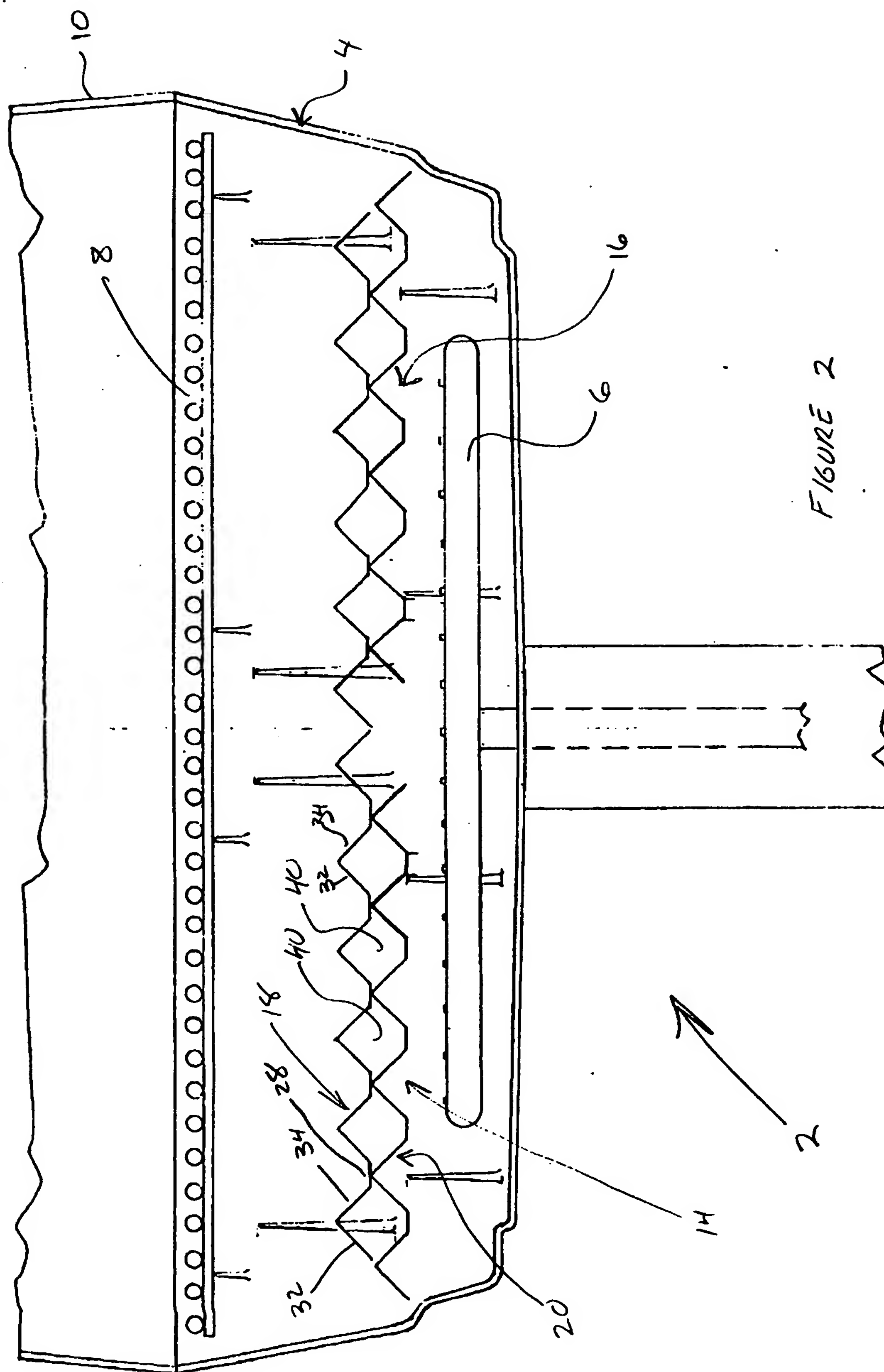


FIGURE 2

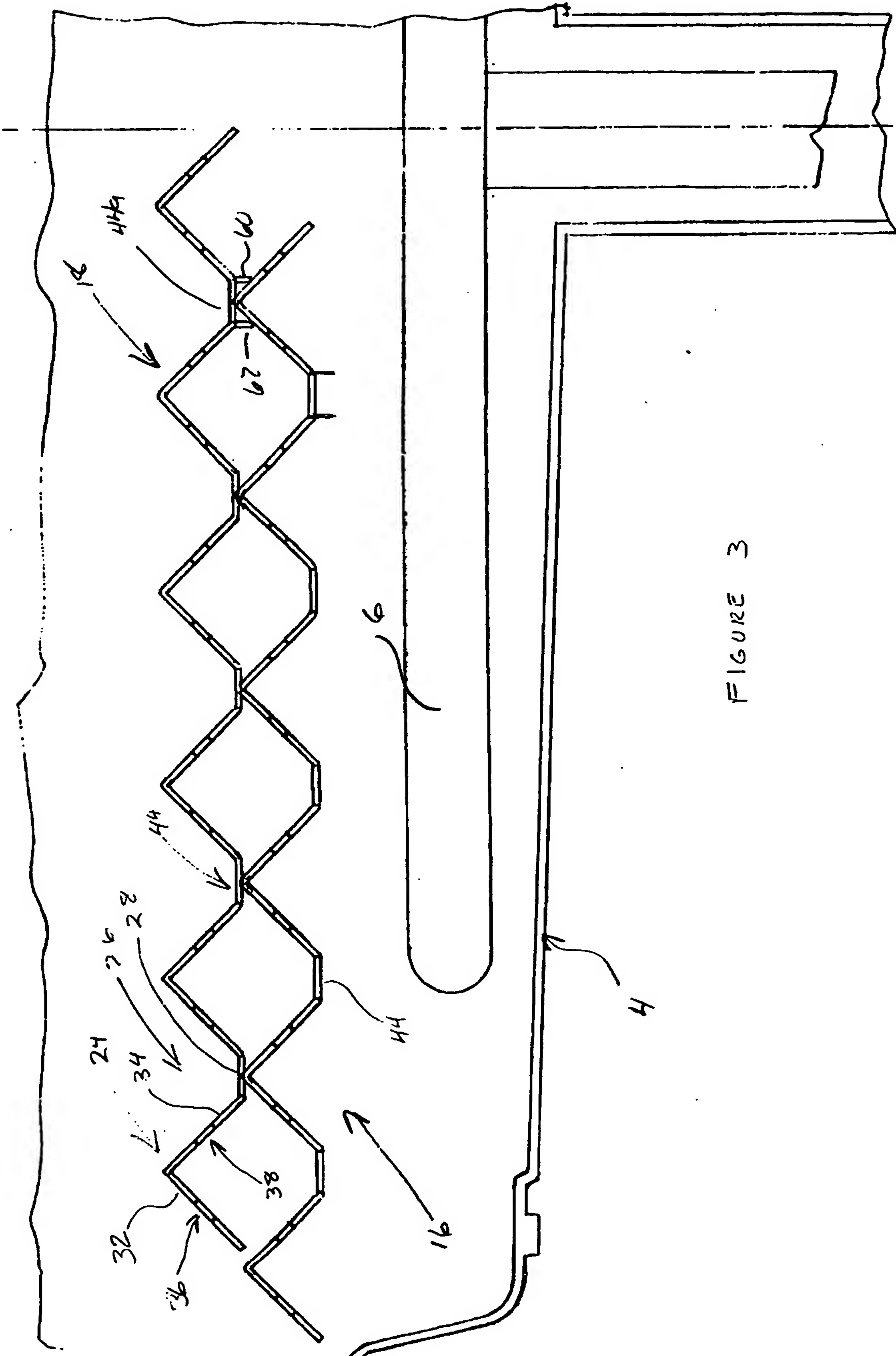


FIGURE 3

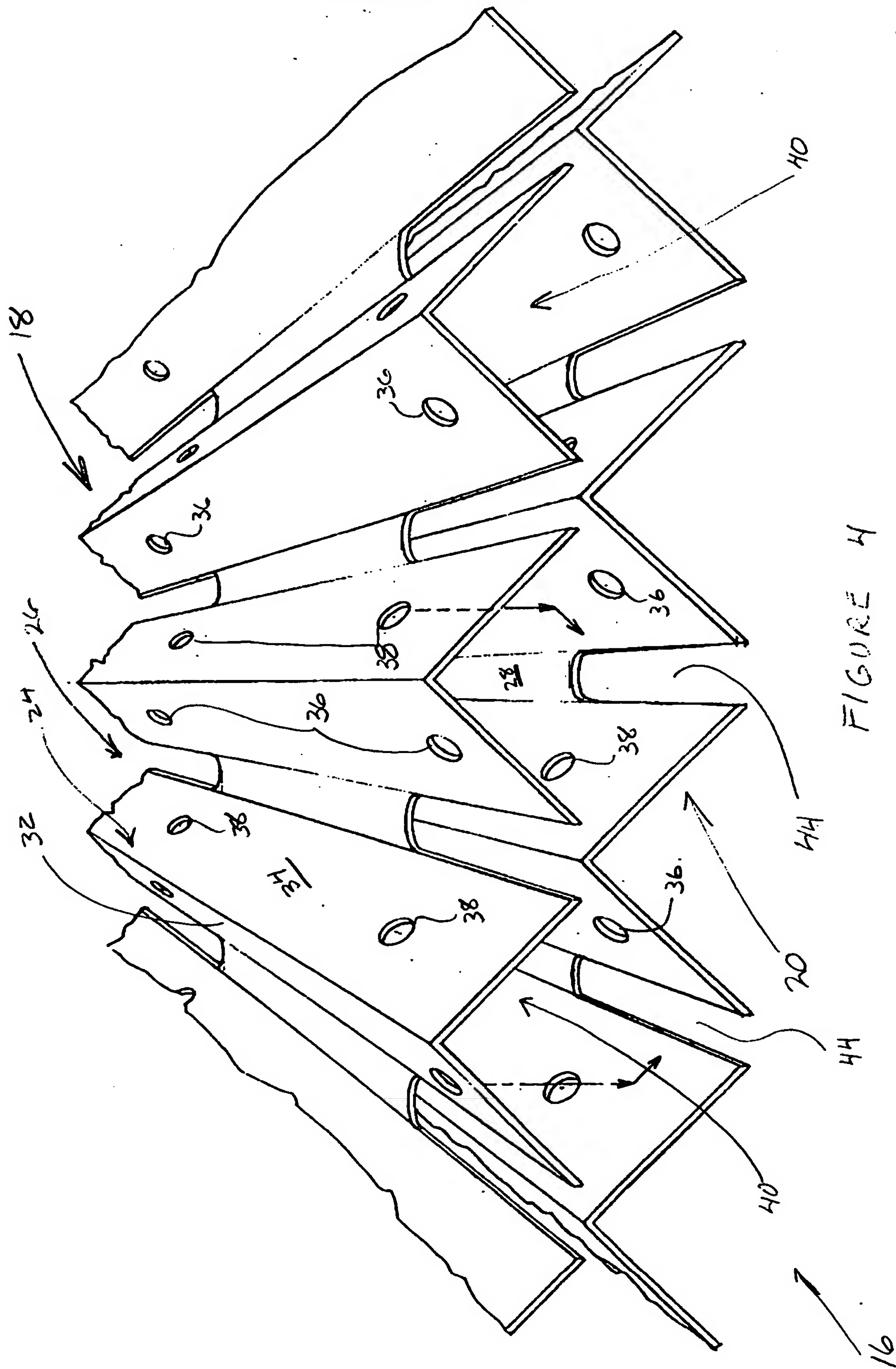
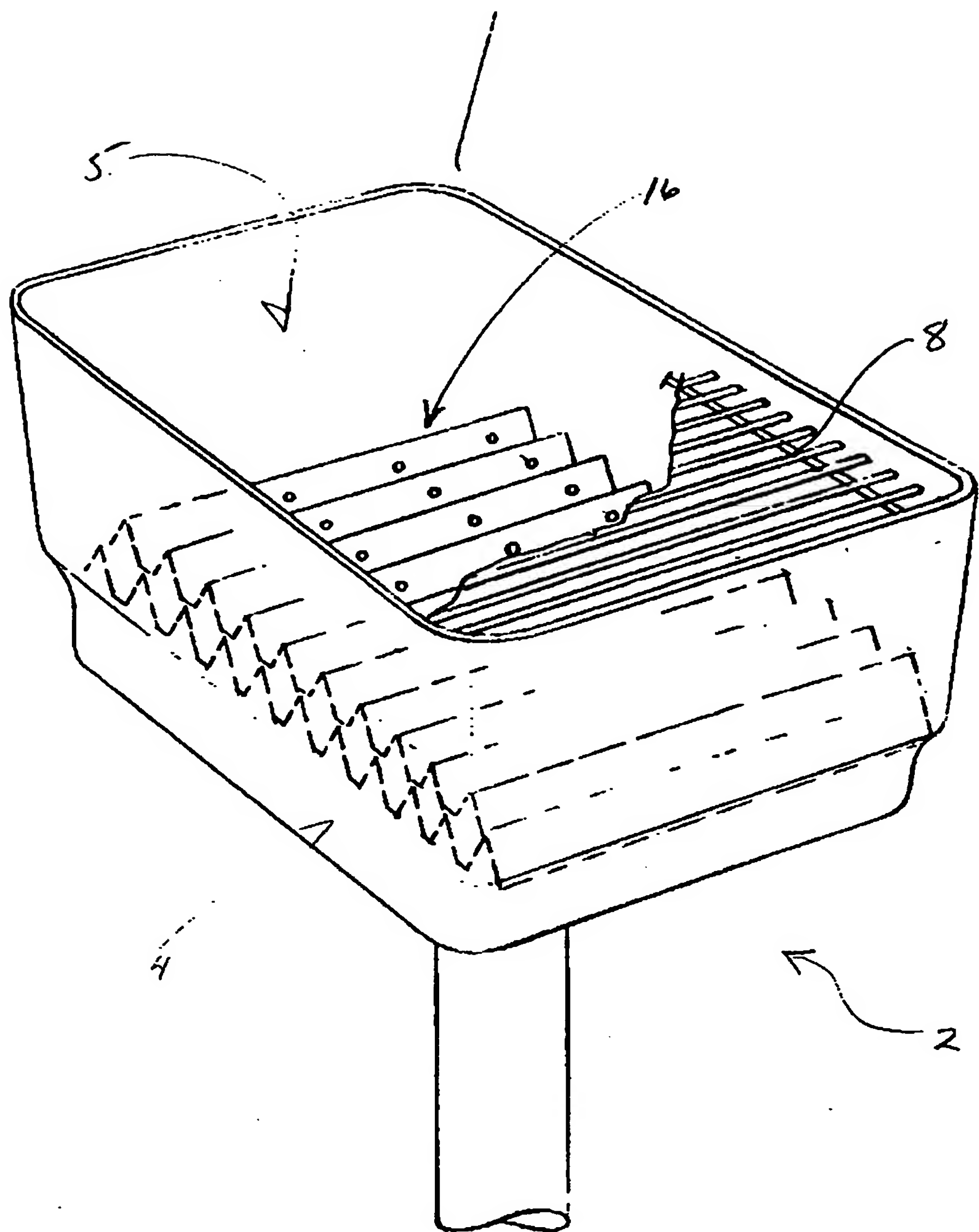


FIGURE 4



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TITLE: Barbecue with system for distributing heat beneath grill and control of **grease** dripping from food during cooking, has two-layered flame control heat distribution substrate between heat source and cooking surface

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PATENT-ASSIGNEE: FIESTA BARBEQUES LTD[FIESN]

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PUB-NO	PUB-DATE	LANGUAGE	PAGES
MAIN-IPC			
CA 2280312 A1	February 13, 2001	E	017
037/07			A47J

APPLICATION-DATA:

PUB-NO	APPL-DESCRIPTOR	APPL-NO	APPL-DATE
CA 2280312A1	N/A	1999CA-2280312	August 13, 1999

INT-CL (IPC): **A47J037/07**

ABSTRACTED-PUB-NO: CA 2280312A

BASIC-ABSTRACT:

NOVELTY - The barbecue has a base (4) which is closed by pivoting lid (10). The base has a cavity which houses the heat source (6), the heat distribution substrate, and the cooking grill (8). The heat distribution substrate separates the cooking grill from the burner and provides protection of the burner from falling **grease** or drippings from any food being cooked. The heat distribution substrate is divided into two substrates (14,16). Each heat distribution substrate has an upper layer (18) which co-operates with a lower layer (20).

DETAILED DESCRIPTION - The first and second layers are of identical cross section and shape. Each layer has a wave-like pattern with a series of peaks separated by troughs. Land portions are located at the base of each trough, and the land portions of the layer (18) engage and are supported by the peaks of the lower layer (20). The two layers are offset from one another to form a series of channels. The land portions include drain slots along their length.

USE - As a barbecue.

ADVANTAGE - Improves distribution of heat beneath cooking grill and enhancing the cooking process.

DESCRIPTION OF DRAWING(S) - The drawing shows a longitudinal sectional view through the barbecue.

Base 4

Heat source 6

Cooking grill 8

Substrates 14,16

Upper layer 18

Lower layer 20

CHOSEN-DRAWING: Dwg.2/4

TITLE-TERMS: BARBECUE SYSTEM DISTRIBUTE HEAT BENEATH GRILL CONTROL **GREASE** DRIP
FOOD COOK TWO LAYER FLAME CONTROL HEAT DISTRIBUTE SUBSTRATE HEAT
SOURCE COOK SURFACE

DERWENT-CLASS: P28

SECONDARY-ACC-NO:

Non-CPI Secondary Accession Numbers: N2001-155926